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is almost always in a natural cavity of an oak or fir stub, tho an unusually large hole made by a flicker is sometimes used. It is seldom at any great height from the ground, usually from ten to fifteen feet, and is generally only six or eight inches deep. An exception to this was in an oak stub where the entrance was only four feet up, the bottom of the cavity being but three inches above the level of the ground. No nesting material or lining of any kind is used, the eggs being deposited on the decayed wood at the bottom of the hole.

The eggs are laid from the first to the second week in April, and are from two to four in number, four being most commonly found. They are pure white in color, a globular oval in shape, with a smooth, finely granulated and somewhat glossy shell. In size they seem exceedingly large for the size of the bird, altho this is one of our largest screech owls. An average egg is as large as an average egg of the long-eared owl, tho the latter is, of course, a much larger bird. The largest egg in my collection measures 1.65x1.40 inches, the smallest 1.48x1.27 inches, an average egg measuring 1.59x1.35 inches.

After the young are partly grown it is most unusual to find either parent on the nest, which makes it seem very possible that the old birds spend most of the day hunting for food. This I know to be the case with the horned owls of eastern Washington.

The young are generally quite lively when taken from the nest, and sometimes very much on the defensive. Daylight does not seem to bother them in the least, for they stare at the intruder in a most uncompromising manner.

The nesting cavity and the ground around it are kept scrupulously clean from first to last, and only rarely an occasional tell-tale bit of down at the entrance discloses the secret to the bird student.

In Massachusetts the male screech owl almost invariably has a roosting hole for himself not far from the nest occupied by the female. With our northwestern sub-species it is extremely doubtful if this ever occurs; at least my nine years' experience in Washington have shown no evidence to that effect.

*Tacoma, Washington.*

### Nesting of the Red-bellied Hawk

BY C. S. SHARP

THIS west-central part of San Diego county is especially favored by the presence of the red-bellied hawk (*Buteo lineatus elegans*). The birds are not commonly seen near the coast, but in the interior valleys, where the river bottoms are more or less thickly lined with trees and scattering groves, we find them following the rivers up to about the base of the coast range.

In these localities the species is a fairly common resident, seldom appearing in the higher enclosed valleys or in the mountainous regions, and their hunting range lies along the rivers and the adjoining fields and low-lying hills.

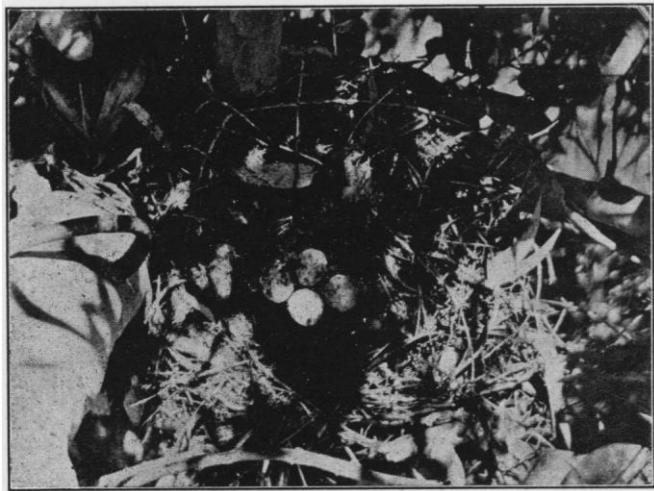
The highest elevation at which I have found them is about 1350 feet, where a pair have for many years inhabited an oak grove on the edge of an open mesa. This is at the head of a steep ravine which runs up for a couple of miles from the river some 900 feet below. Both elevation and location, being so far away from the river bottom, are unusual.

They do not appear to be an open country bird like the red-tail but seem to

prefer the shelter of the groves where their shrill scream is a common bird note, particularly during the nesting season. They are the noisiest of all our hawks. The cry is a short snapping bark or scream, repeated again and again, very different from the long drawn out "ku-e-e-e-ah" of the red-tail, and more resembling the cry of the Cooper hawk but easily distinguishable from it.

Unlike the other large hawks the red-bellied does not seek a commanding situation for its nest. It is unusual to find them nesting in isolated trees, and it is very seldom the nest is visible from any great distance as is often the case with the red-tail and Swainson hawks. The preference is for some fairly thick willow and cottonwood grove and they have a great fondness for Eucalyptus groves, making their nests at times on the masses of bark that have sloughed off and collected in some large crotch of the main branches. These nests are, as a rule, very well concealed and only flushing the bird, or the sight of the handsomely barred tail over the edge, gives proof of what is there. This concealment, however, can hardly be considered as deliberate, for beyond the fact of the choice of a thick growing tree or a grove for the location of the nest there is never any attempt at it.

The nest is generally about 50 feet from the ground, the height depending largely on the size of the surrounding trees, and may be an old crow's or hawk's nest remodelled, or an elaborate structure of the bird's own composition. If undisturbed the same nest will often be occupied year after year; but the birds generally have a second or third nest in reserve and will alternate, almost invariably



NEST AND EGGS OF RED-BELLIED HAWK IN EUCALYPTUS TREE. PHOTO TAKEN FROM DIRECTLY OVERHEAD

doing so if a first clutch of eggs is taken. Where the gray Spanish moss is convenient to the nesting place a great deal of that is used in the lining and often the long streamers will hang down over the edge giving a very pleasing appearance.

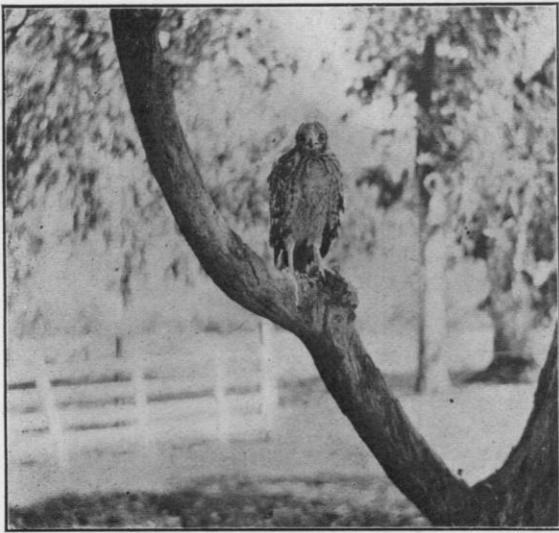
The use of green leaves is a peculiarity of this species and it is very seldom one finds a nest finished or containing eggs where fresh leaves are not in evidence. These are generally of the same tree in which the nest is situated and are renewed from time to time until the eggs are hatched. I have found them in nests with eggs in all stages of incubation. After the young appear the practice is discontinued, the nest soon gets flattened out, and with hungry mouths to feed there is little time—if there is inclination—for the enjoyment of the merely beautiful.

One does not need to look many times into a hawk's nest containing young at dinner-time, which is practically *all* the time, to realize how very great is their economic value.

In this section, where rabbits, squirrels and gophers are plentiful, there are no birds that should be protected more vigorously than the Raptores of all species. Most of the ranch owners appreciate their benefit, but there is always the unwill-

ing-to-learn farmer to whom every hawk is a "hen hawk", and the small boy with a gun to whom every large bird is natural prey, and many are sacrificed needlessly. All hawks among the unknowing have a wholly unfair reputation where poultry is concerned; for the sins of the unjust are visited upon them all. One handsome *B. lineatus elegans* is as slight a danger to a chicken yard as any Raptor we have; I might almost say as any *bird* we have. Nearly every nest of the species that I know of is within a few hundred yards of some barn yard and it is very, very seldom the birds exact tribute.

One of my friends in San Pasqual Valley, where these hawks are common, told me the red-bellied and red-tailed hawks had nested on his ranch as long as he could remember (he is a very old resident) and it was very seldom they would touch a chicken tho the latter were running free all the time. The young hawk in the photo was from a nest in a tree in his barn yard, not over 150 feet from the barn itself. The milk house was under the next tree in the small grove of big Eucalyptus trees at one side of and partly in the corral, the fence of which shows



YOUNG RED-BELLIED HAWK

in the photo. The chicken house is between the milk house and the barn. All the time I was at the nest some 200 chickens of all ages and sizes were working around the barn yard, in the corral and out on the stubble beyond, many of them fully 200 yards from shelter but they never even gave a warning cry when the old hawk flew from the nest across the yard.

The young birds were at an age when their demands for food must have been very great, and there was only one parent bird to look after them, the male bird having been shot a few weeks before by a new hired man. One would think that yellow-legged chickens so con-

venient would prove too great an attraction to the doubly worked mother but they were never touched. The young hawks would have flown in a couple of weeks. The down had nearly disappeared and flight and tail feathers were about two-thirds developed. In appearance they resembled the female bird, the brighter plumage of the male not developing until maturity.

One of the young was very cross when I went up to the nest, screaming and striking with her wings, and when moved from a perilous position near the edge of the nest rolled over on her back and tried to scratch. Her bad temper brought her to a sad ending for she managed to fall out of the nest to the ground, some 50 feet or more, landing heavily and when I got to her she was only a poor little bunch of feathers, and would scream no more. She had been well cared for. Dissection showed a full stomach and crop—a field mouse entire, parts of skulls of two more and a various assortment of small bones and fur and part of the foot of some small bird which I could not identify. The nest contained part of a brush rabbit and some squirrel fur. Her nest mate was quite tame, perched confidently on my

wrist, and took my petting quite as a matter of course. I left him (presumably him) in the willows by the river calling for his ma, and that she attended to his wants was quite evident: for a few weeks later he came up over the hill and made a fruitless dash for a squirrel in my corral—frightening, but not harming, my chickens—perched on a fence post for a while and then flew away.

On July 4, 1906, I went up to another nest which contained two young birds. They were stuffed about as full as they could hold and were so sleepy they could hardly hold their heads up. They would nestle confidently in my hand with a little plaintive chirp and when put back in the nest the heads would go down and eyes close at once. There was part of a large lizard (*Gerrhonotus*) in the nest and their crops were much distended.

These birds were covered with a smoky yellowish down with slight reddish tinge on head and could not have been more than a few days from the shell. This was the latest nesting date of my experience and the eggs must have been produced about the first week in June.

This same nest held two fresh eggs on March 6, 1904, giving this pair of birds the earliest as well as the latest nesting dates of which I have knowledge. The usual nesting date is between the first and the middle of April. One set is the rule when undisturbed; but if the first clutch is taken a second will always be laid, the birds never going very far from the first nest. The raptorial fondness for a chosen range is very great in this species. Taking the eggs seems to trouble them very little and only the destruction of both birds seems to be able to accomplish their removal.

Since 1898 I have had good opportunity for observing an isolated pair. These birds have occupied six different nests—all in Eucalyptus trees—either in groves or as shade trees on sides of the road, the extremes being about a mile apart. Every year but one they have been levied on for one set of eggs. On one year only was a second set taken from them. After the removal of the first clutch the birds have gone to the nearest nest—generally to a nest in the same grove and only a few rods away and have occupied it for a second, never going from one extreme limit of their range to the other.

One nest was for three years occupied first by a pair of Pacific horned owls. In 1899 I found the hawk on the nest which held two fresh eggs, and two young owls were in the branches of the next tree. As that was then the only nest in the grove it looked as if there had been a rather hasty eviction. In another nest of this pair in 1898 I found three eggs of the hawk and one of the long-eared owl.

These nests were in a long branch valley separated from my place by a hill which rises some 200 feet above my house and then drops rather steeply for 500 feet or more to the valley below. In many years residence I have very seldom seen a red-bellied hawk near my place, tho only about a mile away from their nesting range. A few miles away, however, where the lower valley runs up almost to the head of the Escondido Valley thru a long unwooded ravine the birds are very frequently seen, which would seem to show their tendency to hunt the canyons and low foot hills rather than the higher hills and more open country.

The eggs of the red-bellied hawk show the same variations in color and markings that one finds in other Raptores, running thru the usual gamut of spots, splashes and blotches of various shades of reddish brown to very heavily marked specimens. Occasionally one will find an egg wholly unmarked. As a rule they are very handsome, and in series compare very favorably with the eggs of any of the Raptores, few indeed equalling them in beauty.

The usual nest complement is 3, tho 2 is quite as common. Sets of 4 are rare.

This season (1906) has been remarkable for large sets. Out of 10 sets observed in this locality 5 have been of 4 eggs, 3 of 3 and 2 of 2 eggs, all being first sets except 1 of 3 and 1 of 2. Two sets of 3 each were taken by Mr. B. Carpenter from the same nest, which is unusual, evidently the product of the same birds. If undisturbed the first of the two sets would undoubtedly have been 4 eggs instead of 3, as in the second set taken a short time later one egg was very much more advanced in incubation than the others. In one set of 4 one egg is very much smaller than the rest and is unmarked.

*Escondido, Cal.*

### The Oberholser Vireo

BY JOSEPH GRINNELL

IN THE CONDOR for September, 1905, pages 142 and 143, Dr. L. B. Bishop described a new race of the Hutton vireo, naming it *Vireo huttoni oberholseri*. I must confess that I very much doubted the existence of any such race. This impression was based wholly upon "geographical reasoning," for I had never seen any Hutton vireos from San Diego County, whence came the type of Bishop's *V. h. oberholseri*. I had closely compared my Pasadena series in various plumages with specimens from the vicinity of Monterey, the type locality of *V. h. huttoni*, without detecting any decided phylogenetic differences; and I reasoned that the very short distance, 130 miles, and general faunal similarity precluded the existence of another distinct subspecies in San Diego County. That good evidence is now at hand proving to my own satisfaction the existence of a race in southern California, differing appreciably from that found around Pasadena and northward, only goes to show that one must not depend too much on "geographical reasoning"; it may be at fault under the best of circumstances.

I have before me a male vireo taken at Escondido, San Diego County, California, March 27, 1906, which shows the precise characters pointed out by Dr. Bishop in his description of *V. h. oberholseri*. Among my series of 47 skins of *V. h. huttoni* taken from Los Angeles County to Siskiyou County there is not one from which this specimen is not easily distinguishable. It is more leaden-hued instead of greenish dorsally, and ashier ventrally. Pasadena birds show a very slight tendency in this direction as compared with Monterey specimens so that intergradation is probable.

I am indebted to Mr. James Dixon for the privilege of examining this bird and also a nest and set of three fresh eggs taken with it. A description of these latter is apropos. The nest was located fifteen feet from the ground in the upper foliage of a small live oak growing on a hillside about 150 yards from the big reservoir near Escondido. The nest is very bulky, being composed externally of a prodigious quantity of a pale-green fibrous lichen, which is the material invariably chosen for outside lining by the Hutton vireo, according to my experience. This material is in greater quantity and looser texture than is ordinarily the case with the Hutton vireo. As usual the nest is suspended by opposite rims from a V-shaped forking of twigs and surrounded by leaves and staminate flowers of the oak. The lining is of fine round grasses and bits of plant down. The nest is  $1\frac{3}{4}$  inches in internal diameter, by  $1\frac{1}{2}$  inches in inside depth; externally  $3\frac{1}{2}$  by 3